Packet Tracer - Design and Implement a VLSM Addressing Scheme

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
	G0/0			N/A
	G0/1			N/A
	S0/0/0			N/A
	G0/0			N/A
	G0/1			N/A
	S0/0/0			N/A
	VLAN 1			
	VLAN 1			
	VLAN 1			
	VLAN 1			
	NIC			
	NIC			
	NIC			
	NIC			

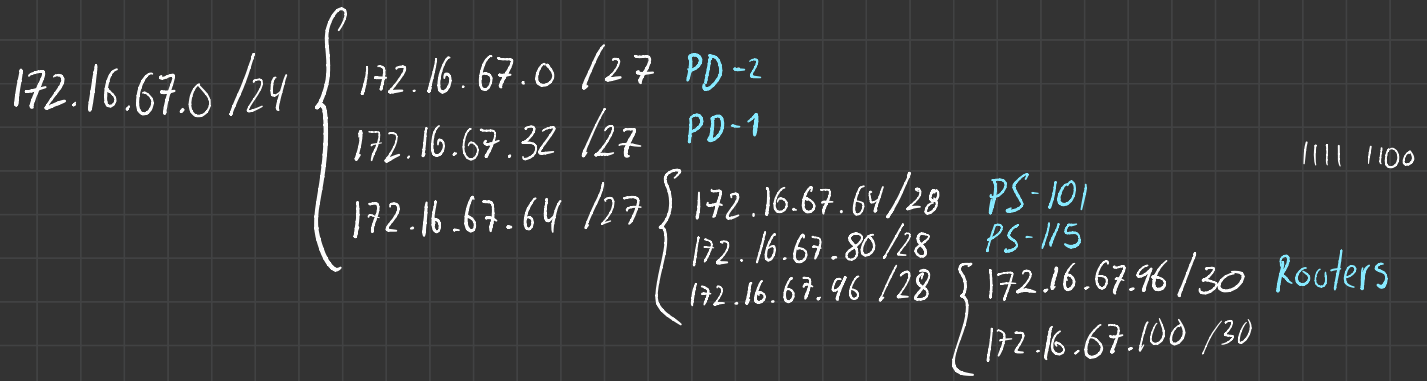
Objectives

In this lab you will design a VLSM addressing scheme given a network address and host requirements. You will configure addressing on routers, switches, and network hosts.

- Design a VLSM IP addressing scheme given requirements.
- Configure addressing on network devices and hosts.
- Verify IP connectivity.
- Troubleshoot connectivity issues as required.

Background / Scenario

You have been asked to design, implement, and test an addressing scheme for a customer. The customer has given you the network address that is suitable for the network, the topology, and the host requirements. You will implement and test your design.


172.16.67.0 /24
172.16.67.0 /27 PD-2
172.16.67.32 /27 PD-1
172.16.67.64 /27
172.16.67.64/28 PS-101
172.16.67.80/28 PS-115
172.16.67.96 /28
172.16.67.96/30 Routers
172.16.67.100 /30
1111 1100

Instructions

You have been given the network address 172.16.67.0 /24 by your customer. The host address requirements are:

Requirements

1 1 1 0 0000 → 32
1111

Host Requirements:

LAN	Number of Addresses Required	
PD-1 LAN	19	/27 ✓
PD-2 LAN	23	/27 ✓
PS-101 LAN	11	/28 ✓
PS-115 LAN	7	/28 ✓
Routers	2	/30 ✓

Design Requirements

- Create the addressing design. Follow guidelines provided in the curriculum regarding the order of the subnets.
- The subnets should be contiguous. There should be no unused address space between subnets.
- Provide the most efficient subnet possible for the point-to-point link between the routers.
- Assign the subnets in the order of the number of hosts from the greatest to the least.
- Document your design in a table such as the one below.

Subnet Description	Number of Hosts Needed	Network Address/CIDR	First Usable Host Address	Broadcast Address
PD-2	23	.0 /27	.1	.31
PD-1	19	.32 /27	.33	.63
PS-101	11	.64 /28	.65	.79
PS-115	7	.80 /28	.81	.95
Routers	2	.96/30	.97	.99

Configuration Requirements

Note: You will configure addressing on **all** devices and hosts in the network.

- Assign the first usable IP addresses in the appropriate subnets to Police for the two LAN links and the WAN link. ✓
- Assign the first usable IP addresses in the appropriate subnets to Schools for the two LANs links. Assign the last usable IP address for the WAN link. ✓
- Assign the second usable IP addresses in the appropriate subnets to the switches.
- The switch management interface should be reachable from hosts on all of the LANs.
- Assign the last usable IP addresses in the appropriate subnets to the hosts.

If the addressing design and implementation are correct, all hosts and devices should be reachable over the network.